In the Specification:

Please replace the Abstract with the following amended Abstract:

a 1

An automated method of improving digital color images at high speed, which supports pipe-lining and has very little memory requirements, and is therefore specially suitable for on-the-fly processing of real time video, as well as for processing of large batches of images without the need of human intervention. The method includes a novel dynamic range adaptation scheme that operates on the norm of the image, which is suitable as is for ~~non-color~~ gray-scale images. For color images, a simple color reconstruction stage is added that maintains optimal color fidelity.

Please replace the paragraph beginning on page 4 line 2 with the following amended paragraph:

a 2

It is an object of the present invention to provide an automated method for real-time improvement of digital video, and for high speed improvement of large batches of digital images for both color and ~~non-color~~ gray-scale cases.

Please replace the paragraph beginning on page 5 line 10 with the following amended paragraph:

a 3

Figure 3 is a schematic view of a way to carry out a second embodiment of the present invention where a ~~non-color~~ gray-scale image can be improved in terms of automatic self adaptation of both dynamic range and spatial resolution.

Please replace the paragraph beginning on page 5 line 14 with the following amended paragraph:

The present invention is of a method for automated high speed improvement of digital color images. Specifically, the method of the present invention can be used to support pipe-lining, and requires very little memory, hence being especially suitable for on-the-fly processing of real time video, as well as for processing of large batches of images without the need of human intervention. The method of the present invention includes a novel dynamic range compression process that operates on the Euclidean norm of the image, and is suitable as is for ~~non-color~~ gray-scale images. For color images, a simple color reconstruction stage is added, a stage that maintains optimal color fidelity.

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Please replace the paragraph beginning on page 6 line 1 with the following amended paragraph:

Referring now to the drawings, and in particular to Fig. 1, a system **100** is shown to carry out a first embodiment of the method of the present invention. This embodiment is used by way of example to demonstrate the image improvement in terms of self adaptation of dynamic range and spatial resolution, as well as in terms of high fidelity color reconstruction, as they are related to color images. It is to be understood that the present method can be easily reduced to ~~non-color~~ gray-scale images, as further explained in detail below. System **100** consists of a digital image supplier **10** such as a camera, a DVD player, a hard disk, etc., that is capable of outputting a sequence of digital color images or frames. Each one of the frames is

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a5 cont'd

represented by a set of matrices of similar size: $C_1(i,j)$, $C_2(i,j)$,...$C_n(i,j)$...$C_m(i,j)$, where $C_n(i,j)$ is the intensity value of the image in the nth color component, at the pixel whose coordinates on a display **16**, e.g., a monitor or a printer, are row i and column j. In the case where said sequence of frames is part of a video movie, it is a common practice to supply each frame as a time sequence of pixels data, going first over the first row starting with its first column and ending with its last column, then repeating this process for the second row, etc., until the last column of the last row is reached.

Please replace the paragraph beginning on page 6 line 28 with the following amended paragraph:

a6

It is readily seen from Eqn. (1) that for a ~~non-color~~ gray-scale image, i.e., when m=1, and the source image is simply $C_1(i,j) \equiv C(i,j)$, Eqn. (1) is reduced to $N(i,j) \equiv C(i,j)$, i.e. the norm of a ~~non-color~~ gray-scale image is the image itself. The DRC process according to Fig. 1 is further advanced by feeding the norm $N(i,j)$ into a Light DRC processor **12** and a Dark DRC processor **13**.

Please replace the paragraph beginning on page 7 line 6 with the following amended paragraph:

a7

However, the norm of a color image is in itself a ~~non-color~~ gray-scale image, so that except for a color filter **15** in Fig. 1, the rest of the DRC process for a color image, represented by blocks **12**, **13** and a balance filter **14**, is identical with the process for a ~~non-color~~ gray-scale image, as described in detail in the following.

Please replace Equation 3 with the following amended Equation:

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$$I_{neg}(i,j) = \cancel{FS}\underline{1} - \frac{FS - N(i,j)}{K + W * \{FS - N(i,j)\}} = \cancel{FS}\underline{1} - \frac{FS - N(i,j)}{K + FS - W * N(i,j)}$$

Please replace the paragraph beginning on page 10 line 6 with the following amended paragraph:

a9

$I_{neg}(i,j)$ is thus obtained by operating with the basic DRC filter of Eq. 2 on the so-called "negative", which is a non-negative mirror ~~of the norm image:~~ FS-$N(i,j)$ of the norm with respect to the line $N(i,j)=FS/2$, then taking the ~~negative~~ mirror image of the DRC result ~~by subtracting it from FS~~ with respect to half unity. This causes the graph of the average of the dark DRC image versus the average of the source image to look as a double-mirror image of the Weber's Law graph of Figure 2, once with respect to the line $Av\{I_i\}=FS/2$ and again with respect to the line $Av\{I_o\}=1/2$, thereby causing the compression to operate mainly in the darker areas of the scenery, hence revealing more data in the lighter areas and complementing the light DRC image.

Please replace the paragraph beginning on page 12 line 3 with the following amended paragraph:

a10

Referring now to Fig. 3, a system **300** is shown to carry out a second embodiment of the present invention, which is related to ~~non-color~~ gray-scale images. This embodiment is obtained from the embodiment of Fig. 1 by way of reduction, where norm processor **11** and color filter **15** of Fig. 1 are both omitted. Then, for this ~~non-color~~ gray-scale embodiment, a ~~non-color~~ gray-scale image $C(i,j)$ is inputted

from a gray-scale Digital Image Supplier **30** directly into light and dark compressors **32** and **33**, identical in way of operation and function with processors **12** and **13** respectively, of Fig. 1. The outputs of these processors are fed into a balance filter **34**, whose function and operation is identical with that of filter **14** of Fig. 1. The ~~non-color~~ gray-scale image $I_{bal}(i,j)$ at the output of filter **34** is improved in terms of dynamic range and spatial resolution adaptation. This image is fed into a display **36** to be further displayed as a ~~non-color~~ gray-scale image.

a10 cont'd

Please replace the paragraph beginning on page 12 line 14 with the following amended paragraph:

Another preferred embodiment for color images is to apply a ~~non-color~~ gray-scale processor like system **300** of Fig. 3 to each one of the single color bands separately (e.g., to each one of the R, G, and B sequences of frames), and then feed the three dynamic range compressed outputs to a compatible (e.g., RGB) input of a display that ~~suports~~ supports this standard (e.g., a common VGA monitor). The advantage of this embodiment is a considerable saving in processing time, since the three DRC processors can operate simultaneously, while color filter **15** in Fig. 1, which is a large time resource consumer, is altogether removed in this embodiment.

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